

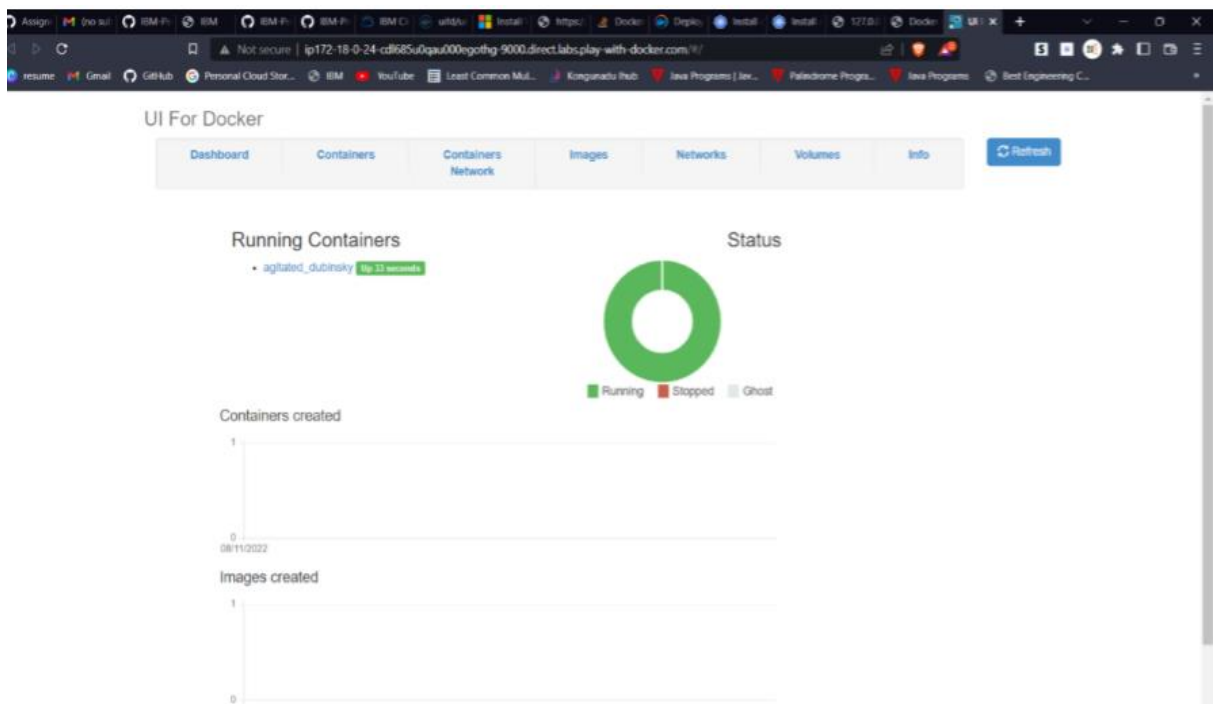
ASSIGNMENT-4

Kubernetes / Docker

Date	12 November 2022
Team ID	PNT2022TMID03356
Project Name	Smart Fashion Recommender Application

QUESTIONS

1. Pull an Image from docker hub and run it in docker playground.



2. Create a docker file for the jobportal application and deploy it in Docker desktop application.

Solution:

app.py

```
from flask import *  
app = Flask(__name__)  
@app.route("/")  
def home():  
    return "Hello World"  
if __name__ == "__main__":  
    app.run(debug=True)
```

Dockerfile:

```
FROM python:3.6  
WORKDIR /app  
ADD . /app  
COPY requirements.txt /app  
RUN python3 -m pip install -r requirements.txt  
RUN python3 -m pip install ibm_db  
EXPOSE 5000  
CMD ["python", "app.py"]
```

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.755]
(c) Microsoft Corporation. All rights reserved.

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker build -t assignment-four
"docker build" requires exactly 1 argument.
See 'docker build --help'.

Usage:  docker build [OPTIONS] PATH | URL | -

Build an image from a Dockerfile

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker build -t assignment-four .
[*] Building 410.4s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                                0.0s
=> => transferring dockerfile: 231B                                              0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                  0.0s
=> [internal] load metadata for docker.io/library/python:3.6                    3.1s
[auth] library/python:pull token for registry-1.docker.io                      0.0s
=> [1/6] FROM docker.io/library/python:3.6@sha256:f8632afa+88c25f9d22394d547d892591067aa4b26a7fa9a6819df9f309af6fc  0.0s
=> [internal] load build context                                                0.0s
=> => transferring context: 292B                                              0.0s
=> CACHED [2/6] WORKDIR /app                                                    0.0s
=> [3/6] ADD . /app                                                            0.0s
=> [4/6] COPY requirements.txt /app                                             0.0s
=> [5/6] RUN python3 -m pip install -r requirements.txt                        5.7s
=> [6/6] RUN python3 -m pip install ibm_db                                     486.6s
=> exporting to image                                                            0.0s
=> => exporting layers                                                            0.7s
=> => writing image sha256:c978f8dadaefc508+6a60020e5640f17a4aa981c68d3f7c7c416ec0c88fcbac  0.0s
=> => naming to docker.io/library/assignment-four                             0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

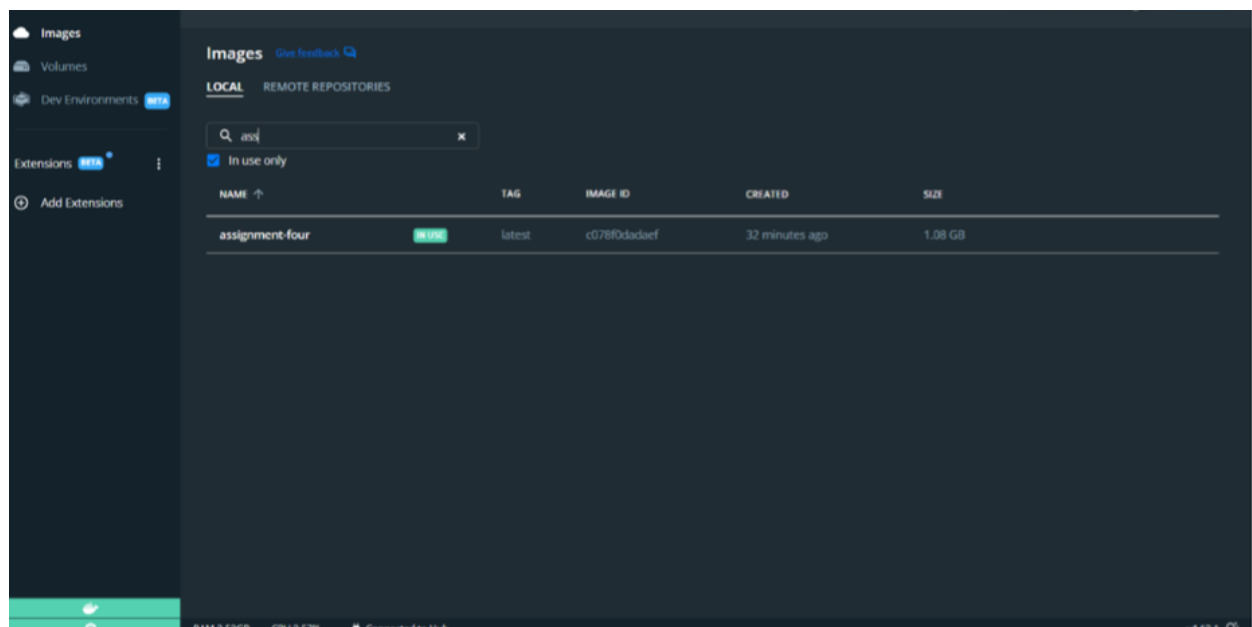
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>
```

```
C:\Windows\System32\cmd.exe
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker images
REPOSITORY                                TAG                IMAGE ID            CREATE
assignment-four                           latest             c978f8dadaef       55 sec
onds ago                                  1.08GB
<none>                                    <none>            43c70dac96eb       15 min
utes ago                                  913MB
docker101tutorial                         latest             3da8546f1c85       5 days
ago                                       28.9MB
alpine/git                                latest             42alcda0ba24       2 week
s ago                                     43.6MB
docker/desktop-git-helper                 c1e362e18fba86bb07f6b657155011bd6791dfc5  352f04e41a19       2 week
s ago                                     45.8MB
hubproxy.docker.internal:5000/docker/desktop-kubernetes kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian 09d7e1dbc2c4       6 week
s ago                                     363MB
k8s.gcr.io/kube-apiserver                 v1.25.2           97801f839490       6 week
s ago                                     128MB
k8s.gcr.io/kube-scheduler                 v1.25.2           ca0ea1ee3cfd       6 week
s ago                                     50.6MB
k8s.gcr.io/kube-controller-manager        v1.25.2           dbfceb93c69b       6 week
s ago                                     117MB
k8s.gcr.io/kube-proxy                     v1.25.2           1c7d8c51823b       6 week
s ago                                     61.7MB
k8s.gcr.io/pause                          3.8               4873874c08ef       4 mont
hs ago                                     711kB
k8s.gcr.io/etcd                           3.5.4-0           a8a176a5d5d6       5 mont
hs ago                                     300MB
k8s.gcr.io/coredns                        v1.9.3            5185b96f0bec       5 mont
hs ago                                     48.8MB
docker/getting-started                    latest            cb90f98fd791       7 mont
hs ago                                     28.8MB
docker/desktop-git-helper                 5a4fca126aadcd3f6cc3a011aa991de982ae7000  efe2d67c403b       15 mon
ths ago                                     44.2MB
docker/desktop-vpnkit-controller          v2.0              8c2c38aa676e       18 mon
ths ago                                     21MB
docker/desktop-storage-provisioner        v2.0              99f89471f470       18 mon
ths ago                                     41.9MB

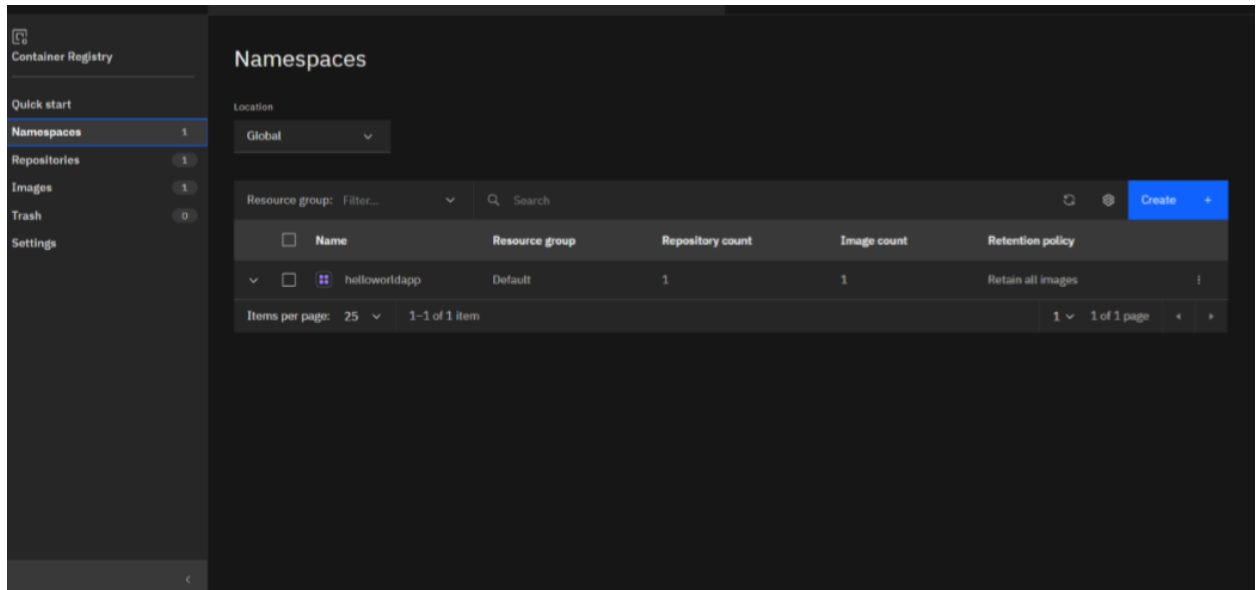
D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker run -p 5000:5000 assignment-four
* Serving Flask app 'app' (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deployment.
```

```
C:\Windows\System32\cmd.exe
docker101tutorial      latest      3da8546f1c85 5 days
ago                   28.9MB
alpine/git             latest      42a1cda0ba24 2 week
s ago                 43.6MB
docker/desktop-git-helper c1e302e10fba86bb07f6b657155011bd6791dfc5 352f04e41a19 2 week
s ago                 45.8MB
hubproxy.docker.internal:5000/docker/desktop-kubernetes kubernetes-v1.25.2-cni-v1.1.1-critools-v1.24.2-cri-dockerd-v0.2.5-1-debian 09d7e1dbc2c4 6 week
s ago                 363MB
k8s.gcr.io/kube-apiserver v1.25.2    97801f839490 6 week
s ago                 128MB
k8s.gcr.io/kube-scheduler v1.25.2    ca8ealee3cfd 6 week
s ago                 50.6MB
k8s.gcr.io/kube-controller-manager v1.25.2    dbfceb93c69b 6 week
s ago                 117MB
k8s.gcr.io/kube-proxy v1.25.2    1c7d8c51823b 6 week
s ago                 61.7MB
k8s.gcr.io/pause 3.8         4873874c08ef 4 mont
hs ago                 711kB
k8s.gcr.io/etcd 3.5.4-0 a8a176a5d5d6 5 mont
hs ago                 300MB
k8s.gcr.io/coredns v1.9.3    5185b96f0bec 5 mont
hs ago                 48.8MB
docker/getting-started latest      cb90f98fd791 7 mont
hs ago                 28.8MB
docker/desktop-git-helper 5a0fca126aadcd3f6cc3a011aa991de982ae7000 efe2d67c403b 15 mon
ths ago                 44.2MB
docker/desktop-vpnkit-controller v2.0       8c2c38aa676e 18 mon
ths ago                 21MB
docker/desktop-storage-provisioner v2.0       99f89471f470 18 mon
ths ago                 41.9MB

D:\OneDrive\Desktop\IBM Docs\Assignments\assignment-four>docker run -p 5000:5000 assignment-four
* Serving Flask app 'app' (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 509-756-282
```



3. Create a IBM container registry and deploy helloworld app or jobportalapp.



```
Command Prompt
C:\Users\ASUS>docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: sathiyananth
Password:
Login Succeeded

Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

C:\Users\ASUS>ibmcloud cr login
Logging 'docker' in to 'icr.io'...
Logged in to 'icr.io'.

OK

C:\Users\ASUS>ibmcloud cr namespace-add helloworldapp
No resource group is targeted. Therefore, the default resource group for the account ('Default') is targeted.

Adding namespace 'helloworldapp' in resource group 'Default' for account SATHIYANANTH PERIYASAMY's Account in registry icr.io...

The requested namespace is already owned by your account.

OK

C:\Users\ASUS>docker tag assignment-four icr.io/helloworldapp/testrepo:helloworldtest

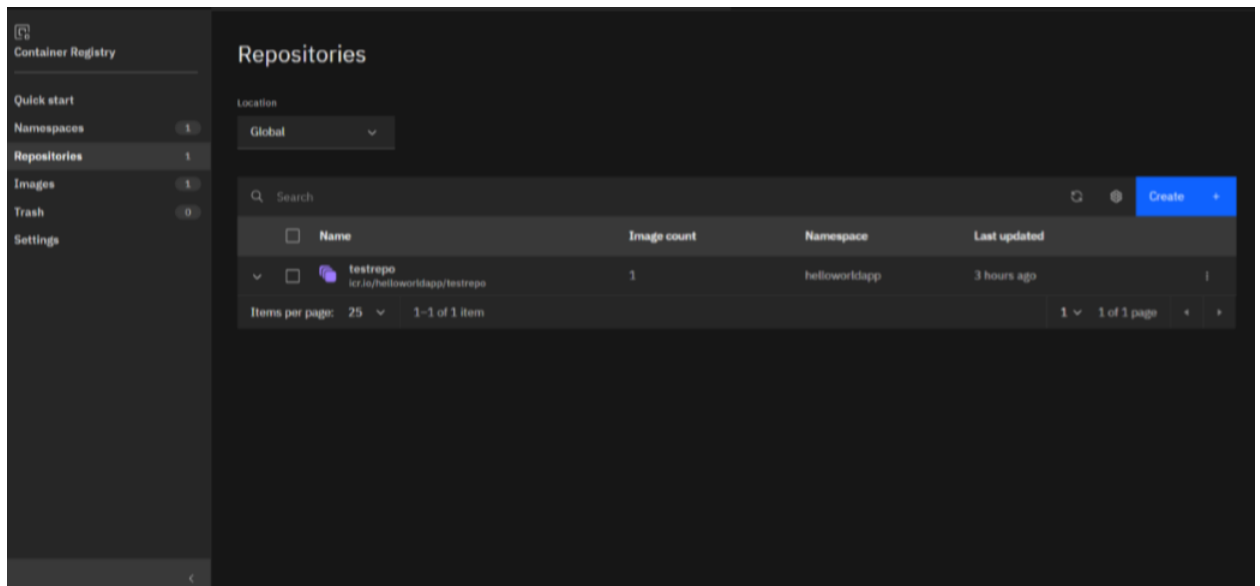
C:\Users\ASUS>docker push icr.io/helloworldapp/testrepo:helloworldtest
The push refers to repository [icr.io/helloworldapp/testrepo]
7f54fa305bac: Pushed
22a411d35e51: Pushed
3b94bdb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac81885ac4: Pushed
aa4c888c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
```

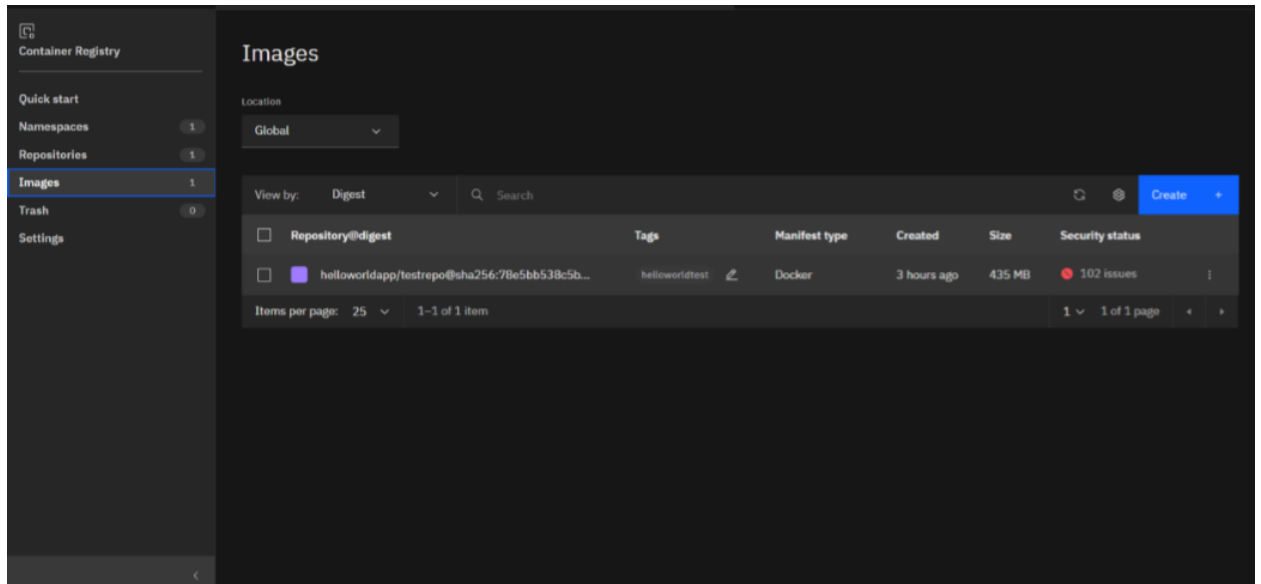
```
Command Prompt
C:\Users\ASUS>docker tag assignment-four icr.io/helloworldapp/testrepo:helloworldtest
C:\Users\ASUS>docker push icr.io/helloworldapp/testrepo:helloworldtest
The push refers to repository [icr.io/helloworldapp/testrepo]
7f54fa305bac: Pushed
22a411d35e51: Pushed
3b94bdb2ef50: Pushed
9ea062ac7e5d: Pushed
78ac91885ac4: Pushed
aa4c888c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936851f93b: Pushed
helloworldtest: digest: sha256:78e5bb538c5b55e5827f0eecf765cb3690a4cf37ec0195dc98cb222669f0155e size: 3262
C:\Users\ASUS>ibmcloud cr image-list
Listing images...

Repository          Tag          Digest          Namespace        Created        Size        Security status
icr.io/helloworldapp/testrepo  helloworldtest  78e5bb538c5b    helloworldapp    2 hours ago    435 MB      -

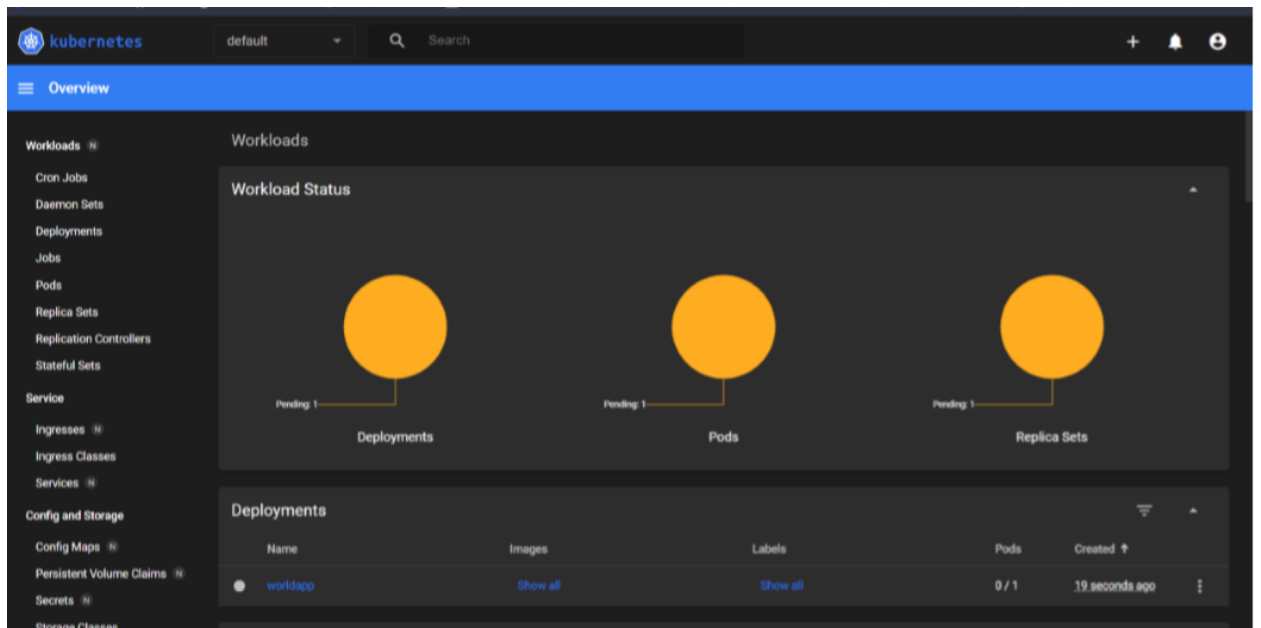
OK


C:\Users\ASUS>|
```









4. Create a Kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport.



kubernetes

default

Search



Overview

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage








Config Maps

Persistent Volume Claims


Secrets

Storage Classes

Namespaces

Name	Labels	Phase	Created
 ibm-cert-store	Show all	Active	an hour ago
 ibm-operators	Show all	Active	an hour ago
 ibm-system	Show all	Active	2 hours ago
 default	Show all	Active	2 hours ago
 kube-node-lease	Show all	Active	2 hours ago
 kube-public	Show all	Active	2 hours ago
 kube-system	Show all	Active	2 hours ago

Nodes

Name	Labels	CPU Ready	CPU requests (cores)	CPU limits (cores)	CPU capacity (cores)	Memory requests (bytes)	Memory limits (bytes)	Memory capacity (bytes)	Pods	Create
 10.144.228.173	Show all	True	959.00m (49.95%)	496.00m (25.94%)	1.92	724.52Mi (26.81%)	5.43Gi (205.90%)	2.64Gi	16 (14.55%)	an hour ago